



AC-100

IN THE UNITED STATES PATENT & TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Applicant: Morgan Kanflod : Examiner: Victor L. MacArthur  
Mark: Coupling Sleeve For :  
Connection Of A Threaded : Group Art Unit: 3679  
Rock Bolt To An Impact :  
Rock Drilling Machine :  
Serial No. 10/539,148 :  
Filed: June 16, 2005 :

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Mail Stop: Appeal Briefs, Patents

APPEAL BRIEF

I. INTRODUCTION -

This is an appeal from the Official Action dated May 1, 2008, placing Claim 1 under final rejection. A timely Notice of Appeal was filed on July 30, 2008.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date indicated below.

  
MARK P. STONE  
Reg. No. 27,954

9/16/08  
(Date of Deposit)

A true copy of Claim 1 is reproduced in the attached Appendix of Appealed Claims. Claim 1 is the only appealed claim, and the only claim pending in the present application.

II. REAL PARTY IN INTEREST -

Atlas Copco Rock Drills AB, a Swedish corporation maintaining its principal place of business at SE-701 91, Orebro, Sweden, the Assignee of all right, title and interest in and to the present patent application, is the real party in interest.

III. RELATED APPEALS AND INTERFERENCES -

Applicant, Applicant's Assignee, and the legal representative of Applicant and the legal representative of Applicant's Assignee, are unaware of any prior or pending appeals, interferences or judicial proceedings which may be related to, directly affect or be directly affected by, or have a bearing on the Board's decision in the present Appeal.

IV. STATUS OF CLAIMS -

Appeal independent Claim 1 is the only claim pending in the present application. This claim has been rejected over the prior art in the Official Action dated May 1, 2008, placing the patent application under final rejection.

No claims have been allowed, withdrawn, objected to, or cancelled.

V. STATUS OF AMENDMENTS -

No Amendment, or any other response to the Final Action dated May 1, 2008, has been filed.

VI. SUMMARY OF CLAIMED SUBJECT MATTER -

Claim 1, the only claim on appeal, is directed to a coupling sleeve connecting a threaded rock bolt designated by reference numeral 1, to an impact rock drilling machine designated by reference numeral 2 (Applicant's specification, page 2, lines 1 - 2 and 4 - 5; Figs. 1 - 2). The coupling sleeve is formed from a first part designated by reference numeral 3 provided with an internal thread designated by reference numeral 4 for connection to the rock bolt 1. (Applicant's specification, page 2, lines 1 - 2; Fig. 2 of the drawing), and a second part designated by reference numeral 5 provided with an internal thread designated by reference numeral 6 for connection to the rock drilling machine 2 (Applicant's specification, page 2, lines 3 - 5; Fig. 2 of the drawing). The second part 5 of the coupling sleeve comprises a locking device designated by reference numeral 7 (Applicant's specification, page 2, lines 6 - 10; Fig. 1 of the drawing). The locking device 7 is arranged substantially transversely to a longitudinal axis designated by reference

numeral 9 of the coupling sleeve (Applicant's Specification, page 2, lines 6 - 8; Fig. 1 of the drawing). The locking device 7 cooperates with a region designated by reference numeral 8 on the rock drilling machine 2 for preventing separation of the coupling sleeve from the rock drilling machine 2 (Applicant's Specification, page 2, lines 8 - 10; Figures 1 - 2 of the drawing). During a drilling operation, percussion energy is transmitted from the rock drilling machine 2 to the rock bolt 1 when the locking device 7 is unloaded (Applicant's specification, page 2, second paragraph, lines 1 - 4). The locking device 7 retains the drilling machine 2 connected to the second part 5 of the coupling sleeve when the rock bolt 1 is disconnected from the first part 3 of the coupling sleeve by rotation of the rock drilling machine 2 in a direction which disconnects the first part 3 of the coupling sleeve from the rock bolt 1 (Applicant's Specification, page 2, second paragraph, lines 4 - 9).

VII. GROUNDs OF REJECTION TO BE REVIEWED ON APPEAL -

The grounds of rejection to be reviewed on Appeal are:

1. Whether appealed independent Claim 1 is anticipated under 35 U.S.C. Section 102(b) by U.S. Pat. No. 1,994,795 (Sanderson); and

2. Whether appealed independent Claim 1 is anticipated under 35 U.S.C. Section 102(b) by U.S. Pat. No. 1,701,985 (Ponto), or in the alternative, obvious under 35 U.S.C. Section 103(a) over Ponto (U.S. Pat. No. 1,701,985) in view of Sanderson (U.S. Pat. No. 1,994,792).

VIII. ARGUMENT -

As discussed herein, independent Claim 1 defines a coupling sleeve connecting a threaded rock bolt to an impact rock drilling machine, the coupling sleeve including a locking device for retaining the rock drilling machine connected to a second part of the coupling sleeve for permitting the rock drilling machine to be rotated in a direction for disconnecting the rock bolt from a first part of the coupling sleeve without disconnecting the second part of the coupling sleeve, which contains the locking device, from the rock drilling machine. In this manner, the rock bolt reinforces a rock after the rock bolt has been disconnected from the coupling sleeve, while the rock drilling machine remains connected to the coupling sleeve by the locking device to proceed with the next rock drilling operation.

As discussed in Applicant's specification, after the rock bolt is connected to the first part of the coupling sleeve and anchored in a hole in a rock, the rock drilling machine is rotated in a direction which loosens the thread connection between the coupling sleeve and the rock bolt to disconnect the

rock bolt from the coupling sleeve to permit the rock bolt to remain in the rock for reinforcing the rock. However, the second part of the coupling sleeve, which is connected to the drilling machine and which would otherwise be loosened by rotating the drilling machine in a direction which loosens the coupling sleeve from the rock bolt, remains connected to the rock drilling machine by loading the locking device in the second part of the coupling sleeve connecting the coupling sleeve to the drilling machine before the rock drilling machine is rotated in a direction which loosens the rock bolt from the first part of the coupling sleeve. Accordingly, the coupling sleeve remains connected to the rock drilling machine during normal operation of the rock drilling machine, and remains connected to the rock drilling machine even when the rock drilling machine is rotated in an opposite direction to disconnect the rock bolt from the first part of the coupling sleeve.

When the rock drilling machine is operating normally to anchor the rock bolt into a rock, the locking device is unloaded from the coupling sleeve to permit efficient transfer of percussion energy from the rock drilling machine to the rock bolt through the coupling sleeve disposed therebetween. Accordingly, the coupling sleeve defined by appealed independent Claim 1 enables efficient transfer of percussion energy between a rock drilling machine and a rock bolt during normal operation of the rock drilling machine when the locking device is unloaded, and enables the rock bolt to be disconnected from the coupling sleeve

by rotating the rock drilling machine in a direction loosening the thread connection between the rock bolt and one end of the coupling sleeve, while preventing loosening of the thread connection between the rock drilling machine and the other end of the coupling sleeve by loading the locking device in the coupling sleeve before the rock drilling machine is rotated in the loosening direction. Thus, the structural relationship between the coupling sleeve and the locking device permits sequential reinforcement of rock by efficiently disconnecting the rock bolt from the rock drilling machine, while maintaining the connection between the coupling sleeve and the rock drilling machine for connecting another rock bolt to the rock drilling machine through the coupling sleeve before commencing a subsequent drilling operation.

\* \* \*

a). Rejection Of Claim 1 As Being Anticipated By Sanderson

In the Official Action placing independent Claim 1 under final rejection as being anticipated by the Sanderson patent, the Examiner states that Sanderson discloses "...a coupling sleeve (6) connecting a threaded rock bolt (5) to an impact rock drilling machine (3, 2),...". Applicant respectfully disagrees with this conclusion. Element 6 of the Sanderson patent is disclosed as being a "flattened blade portion" of body portion 1 of a drill tool (See page 2, first column, lines 20 - 24 of the

Sanderson specification). The Sanderson patent is directed to "...tools for use in churn and percussion drilling and more particularly to a tool assembly for use in deep well drilling" (page 1, first column, lines 1 - 3 of the Sanderson specification). Therefore, the Sanderson patent is not directed to a coupling sleeve connecting a threaded rock bolt to an impact rock drilling machine in which the rock bolt is disconnected from the coupling sleeve for reinforcing rock with the rock bolt as disclosed and claimed by Applicant.

The Official Action states that element 15 of the Sanderson device, which is identified in the Sanderson specification as a dowel (Sanderson specification, page 2, first column, line 55), constitutes a locking device. Assuming arguendo that this conclusion is correct, element 15 of Sanderson is loaded during a normal drilling operation. On the contrary, the locking device of the coupling sleeve defined by independent appealed Claim 1 is loaded only during rotation of the drilling machine in a direction to disconnect the rock bolt from the drilling machine, but is unloaded during a normal drilling operation to permit transfer of percussion energy through the coupling sleeve from the rock drilling machine to the rock bolt. Thus, the structural arrangement and cooperation of the components of the coupling sleeve defined by appealed independent Claim 1 require that the locking device be unloaded during normal drilling operations, and that the locking device be loaded when the drill is rotated in reverse to disconnect the rock bolt from the coupling sleeve,

opposite to that disclosed by the Sanderson patent which teaches loading the locking device during normal drilling operations.

The Sanderson device transmits percussion energy in a manner different from that disclosed and claimed by Applicant. The coupling sleeve defined by Applicant's appealed independent Claim 1 transmits both percussion energy and rotational movement during a percussion operation when there is no load on the locking device of the coupling sleeve (independent Claim 1 expressly recites that the locking device of the coupling sleeve is unloaded during a percussion operation). Thus, by loading the locking pin provided to prevent rotation of the drilling machine relative to the coupling sleeve during reverse rotation for disconnecting the coupling sleeve from the rock bolt, while unloading the locking pin during a normal drilling operation, significantly reduces the load on the locking pin. The drilling sleeve defined by appealed independent Claim 1 recognizes that unloading the locking device during transmission of percussion energy during a normal drilling operation is advantageous, while the locking element of the Sanderson patent remains in a loaded state during normal drilling operations when percussion energy is being transmitted.

The Sanderson patent discloses a tap bar tool shaft connected to a rope (10) through a rope socket (2) secured by a threaded stud (3), in which a dowel (15) prevents loosening of

the threaded stud (3) during operation (See page 2, first column, lines 13 - 18 and 55 - 58 of the Sanderson specification).

Although Sanderson states that it teaches percussion drilling, the tool disclosed therein does not transmit percussion or rotational energy, but rather the tool is exposed to a resulting transverse wave of impact vibrations, each time the tool drops (See page 1, first column, lines 14 - 19 of the Sanderson specification). Thus, the tool described in Sanderson cannot transmit percussion energy in the same manner as the coupling sleeve defined by Applicant's independent Claim 1 because the Sanderson tool does not have a rigid connection, but instead, the tool is connected to a rope.

Appealed independent Claim 1 has been rejected as being anticipated by the Sanderson patent. A rejection of a claim as being anticipated by a prior art reference requires the Patent & Trademark Office to establish a strict identity of invention between the rejected claim and a single applied prior art reference. Stated in other words, a rejection of a claim as being anticipated by a prior art reference is improper unless a single prior art reference discloses all features of the rejected claim, as arranged in the claim. (See, for example, Connell v. Sears, Roebuck & Co., 220 USPQ 193 (Fed. Cir. 1983)).

In the instant case, the Sanderson patent does not disclose all features of the coupling sleeve defined by independent Claim 1, as arranged in the claim. As discussed, Sanderson does not

disclose: 1). a coupling sleeve for connecting a rock drilling machine to a rock bolt for disconnecting the rock bolt from the coupling sleeve for reinforcing a rock; 2). the arrangement of a locking device in the coupling sleeve which is in its unloaded state during normal drilling operation to permit transmission of percussion energy between the rock drilling machine and the rock bolt through the coupling sleeve disposed therebetween; and 3). the arrangement of a locking device in the coupling sleeve, which in its loaded state, permits the rock bolt to be disconnected from one end of the coupling sleeve by rotation of the rock drilling machine in a direction for loosening the thread connection between the coupling sleeve and the rock bolt, while preventing loosening of the threaded connection between the rock drilling machine and the coupling sleeve when the rock drilling machine is rotated in the loosening direction.

Applicant respectfully submits that there is clearly no strict identity of invention between the coupling device defined by independent Claim 1 and the disclosure of the Sanderson patent, and therefore independent Claim 1 is not anticipated by Sanderson. In the Official Action placing independent Claim 1 under final rejection, the Examiner failed to give full consideration to the claim on the grounds that the claim includes functional language. Applicant submits that all positively recited features of appealed independent Claim 1, even if considered to be somewhat functional in nature, are entitled to full consideration in the patentability determination. Applicant

respectfully refers to In re Hallman, 210 USPQ 609 (CCPA, 1981). The Hallman decision concluded that there is nothing intrinsically wrong with defining something by what it does rather than by what it is, and that product claims may be drafted to include process steps to wholly or partially define the claimed product. To the extent that the process limitations distinguish the claimed product over the prior art, such limitations must be given the same consideration as traditional product characteristics.

b). Rejection Of Independent Claim 1 As Being Anticipated  
By Ponto

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The Ponto patent, like the Sanderson patent discussed above, is not directed to a coupling sleeve connecting a threaded rock bolt to an impact rock drilling machine for reinforcing rocks by a rock bolt disconnectable from the rock drilling machine through the coupling sleeve. On the contrary, the Ponto patent is directed to a deep well sucker rod (page 1, lines 1 - 4 of the Ponto specification).

As also discussed with respect to the Sanderson patent, the locking device disclosed by Ponto (which is identified as locking pin 14 in the Ponto specification) is loaded during a normal drilling operations, contrary to the coupling sleeve defined by appealed independent Claim 1 which expressly recites that the locking device is unloaded during normal drilling operations, and

is loaded only when the drilling device is rotated in a direction to disconnect the coupling sleeve from the rock bolt.

As also discussed with respect to the Sanderson patent, the device of the Ponto patent transmits percussion energy and rotational movement in a manner different from that of the coupling sleeve defined by independent Claim 1. As noted, the locking device of the coupling sleeve defined by appealed independent Claim 1 is loaded only during rotation of the drilling machine in a direction to disconnect the rock bolt, but the locking device is unloaded during normal drilling operations. As discussed above with respect to the Sanderson patent, loading the locking device during normal drilling operations increases the load on the locking device significantly more than if the locking device were loaded only when the drilling machine is rotated in a direction to disconnect the rock bolt from the coupling sleeve. Thus, the structural arrangement of the coupling device defined by appealed independent Claim 1, including the locking device, recognizes and expressly recites transmission of percussion energy from a rock drilling machine to a rock bolt when the locking device is unloaded, a feature which is not recognized by the Ponto patent.

The Ponto patent discloses a deep well sucker rod, which is not capable of transmitting percussion energy because the threaded pins (5, 6) are not in contact with any bottom in the box (7). Percussion energy in a drilling machine is not

transmitted via the surfaces of threads, but is transmitted through the bottom of a device. Moreover, the locking pin of the Ponto device maintains the threaded part in place during normal drilling operations, while the locking device of the coupling sleeve defined by appealed independent Claim 1 is in its unloaded state during normal drilling operations when percussion energy is transmitted from the rock drilling machine to the rock bolt through the coupling sleeve.

Applicant respectfully submits that the coupling sleeve defined by appealed independent Claim 1 is not anticipated by the Ponto patent because there is no strict identity of invention between the claimed coupling sleeve and the disclosure of Ponto. See Connell v. Sears, Roebuck & Co., supra. As discussed with respect to the Sanderson patent, Ponto does not disclose 1). a coupling sleeve for connecting a rock drilling machine to a rock bolt for disconnecting the rock bolt from the coupling sleeve for reinforcing a rock; 2). the arrangement of a locking device in the coupling sleeve which is in its unloaded state during normal drilling operation to permit transmission of percussion energy between the rock drilling machine and the rock bolt through the coupling sleeve disposed therebetween; and 3). the arrangement of a locking device in the coupling sleeve, which in its loaded state, permits the rock bolt to be disconnected from one end of the coupling sleeve by rotation of the drilling machine in a direction for loosening the thread connection between the coupling sleeve and the rock bolt, while preventing loosening of

the threaded connection between the rock drilling machine and the coupling sleeve when the rock drilling machine is rotated in the loosening direction.

As also noted with respect to the Sanderson patent, even if the recitations of appealed independent Claim 1 are considered to be somewhat functional in nature, each positively recited feature is entitled to patentable consideration when comparing the coupling sleeve defined by appealed independent Claim 1 to the disclosure of the applied prior art reference. In re Hallman, supra.

c). Rejection Of Claim 1 As Being Obvious Over A  
Combination Of Ponto And Sanderson

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As discussed herein, neither the Sanderson or Ponto patents teach all positively recited features of appealed independent Claim 1, as arranged in the claim. On the contrary, each of these two patents teach against significant positively recited features of the coupling sleeve defined by appealed independent Claim 1. Accordingly, there is no suggestion in the prior art itself, or within the knowledge of a person skilled in the art, to combine Ponto and Sanderson in any manner rendering the coupling sleeve defined by appealed independent Claim 1 obvious.

It is well established that references cannot be combined to reject a claim in the absence of a suggestion or motivation in the prior art itself, or within the knowledge of a person skilled

in the relevant art, to make the combination. Even if all features of a claim are disclosed separately in different prior art references, this does not negate the patentability of a claim in the absence of a suggestion or motivation in the prior art itself, or within the knowledge of a person skilled in the relevant art, to make the combination. See, for example, In re Fritch, 23 USPQ 2d 1780 (Fed. Cir. 1992); and Micro-Chemical, Inc. v. Great Plains Chemical Co., Inc., 41 USPQ 2d 1238 (Fed. Cir. 1997).

In the instant case, there is clearly no suggestion or motivation in the prior art itself, or within the knowledge of a person skilled in the relevant art, to combine Sanderson and Ponto, as proposed in the final action, as a result of the diverse teachings of the two references when compared to the coupling sleeve defined by appealed independent Claim 1, and the failure of either of the two references to disclose or suggest the positively recited features of the coupling sleeve defined by appealed independent Claim 1. Accordingly, the only basis for combining these two references to reject appealed independent Claim 1 (if, in fact, the references can be combined to result in the claimed device, a proposition with which Applicant disagrees) must be derived from the use of Applicant's own disclosure as a guide for selectively combining different features of different references to reconstruct the claim. However, a rejection based on hindsight reconstruction of the claim is improper, as a matter of law. See, Orthopedic Equipment Co. v. United States, 217 USPQ

193 (Fed. Cir. 1983); In re Fritch, supra; and Micro-Chemical, Inc. v. Great Plains Chemical Co., Inc., supra.

IX. CONCLUSION -

For the reasons discussed herein, and throughout the prosecution of this patent application, Applicant submits that independent Claim 1 is allowable over the prior art applied in the Official Action placing this patent application under final rejection, and requests that the rejection of appealed independent Claim 1 be reversed.

Respectfully submitted,



Mark P. Stone  
Reg. No. 27,954  
Attorney for Applicant  
25 Third Street, 4th Floor  
Stamford, CT 06905  
(203) 329-3355

APPENDIX OF APPEALED CLAIM

Claim 1. Coupling sleeve connecting a threaded rock bolt (1) to an impact rock drilling machine (2), said coupling sleeve comprising a first part (3) provided with an internal thread (4) for connection of the rock bolt (1), and a second part (5) provided with an internal thread (6) for connection of the rock drilling machine (2), characterized in that the second part (5) comprises a locking device (7) arranged substantially transversely to a longitudinal axis (9) of the coupling sleeve, said locking device cooperating with a region (8) on the rock drilling machine (2) for preventing separation of the coupling sleeve and the rock drilling machine (2), wherein percussion energy is transmitted from the rock drilling machine to the rock bolt during a percussion operation when the locking device is unloaded, and said locking device retains the rock drilling machine connected to the coupling sleeve when said rock bolt is disconnected from said coupling sleeve by rotation of said rock drilling machine in a direction for disconnecting said first part of said coupling sleeve from said rock bolt for reinforcing a rock with said rock bolt.

EVIDENCE APPENDIX

NONE

RELATED PROCEEDINGS APPENDIX

NONE